CLAIMS

1. A system for purging sulfate from a NOx trap (1) associated with oxidation catalyst-forming means (2), and integrated in an exhaust line (3) of a motor vehicle diesel engine (4), in which the engine is associated with common manifold or "rail" fuel feeder means for feeding fuel to the cylinders of the engine and adapted, by modifying engine operation control parameters, to cause the engine to switch between operating with a lean mixture (9) and with a rich mixture (10), the system being characterized in that the fuel feeder means (7, 8) are adapted to define three strategies (11, 12, 13) for controlling the operation of the engine with a lean mixture for the purpose of obtaining different temperature levels in the exhaust line, the first strategy (11) being referred to as a normal strategy and corresponding to normal operation of the engine, the second strategy (12) being referred to as a level 1 strategy, and the third strategy (13) being referred to as a level 2 strategy, the temperature level obtained by applying the third, level 2 strategy being higher than that obtained by applying the second, level 1 strategy, which is itself higher than that obtained by applying the first, normal strategy, and in that the fuel feeder means (7) are connected to:

· means (8) for detecting a request to purge sulfate so as to control the feeder means (7) in order to engage operation of the engine in the second, level 1 strategy (in a step 21);

· means (8, 17, 18) for monitoring the activation state of the catalyst-forming means (2) to engage the third, level 2 strategy (in a step 23);

· means (8, 16) for acquiring the temperature level in the exhaust line (3) to engage operation of the engine with a rich mixture (in a step 25) when this temperature level exceeds a predetermined target temperature during a predetermined first time period or for switching off

sulfate purging (in a step 24a) if this temperature is not reached before a predetermined maximum second time period expires; and

· means (8) for monitoring the rich mixture operation of the engine:

· to cause the engine to operate in lean mixture (in a step 29) in the third, level 2 strategy at the end of a third predetermined time period;

· to cause the engine to operate with a lean mixture (in a step 29) in a third, level 2 strategy if the temperature level in the exhaust line drops below a predetermined low temperature threshold during a fourth time period;

· to cause the engine to operate with a lean mixture (in a step 31) in a second, level 1 strategy if the temperature level in the exhaust line exceeds a predetermined high temperature threshold during a fifth time period;

· to maintain the engine operating in this second, level 1 strategy during a predetermined forcing sixth time period (in a step 32) or until the moment when the temperature level in the exhaust line has dropped back below the high temperature threshold minus an hysteresis offset during a seventh time period (in a step 33);

· to cause the engine to operate with a lean mixture (in a step 34) in a first, normal strategy when the temperature level in the exhaust line has not dropped back below the high temperature threshold minus the hysteresis offset at the end of a maximum cooling eighth time period, until the temperature level in the exhaust line has dropped back below said high temperature threshold minus the hysteresis offset during the seventh time period;

· to maintain the operation of the engine in lean mode (in a step 36) in one of the following

strategies: level 2, level 1 or normal, as defined above, during a ninth time period; and

· at the end of said ninth time period, if the temperature level in the exhaust line lies between the predetermined target temperature and the high temperature threshold, to loop control of the engine back starting from operation with a rich mixture (in a step 25) until a request is detected (in a step 37) to stop sulfate purging, said request being detected by corresponding detector means (8).

2. A system according to claim 1, characterized in that the threshold temperatures are calibratable.

3. A system according to claim 1 or claim 2, characterized in that the time periods are calibratable.

4. A system according to any preceding claim, characterized in that it includes means (15) for issuing the sulfate purging request and the request to stop sulfate purging.

5. A system according to any preceding claim, characterized in that the means for monitoring the activation state of the catalyst-forming means and the temperature level acquisition means in the exhaust line comprise temperature sensors (16, 17, 18).

6. A system according to any preceding claim, characterized in that the fuel feeder means are adapted to take account of aging of the trap.